

CLAIMS

1. A recombinant eucaryote cell or organism having incorporated in its genome a genetic construct made of at least one nucleotide sequence encoding a toxic gene  
5 (TOX) under the control of an inducible promoter/operator genetic sequence and possibly a selectable marker.

2. The recombinant eucaryote cell or organism according to claim 1, wherein the genetic sequence encoding a toxic molecule is a genetic sequence encoding a  
10 poison protein, selected from the poison/antidote group.

3. The recombinant eucaryote cell or organism according to the claim 2, wherein the genetic sequence encoding the toxic molecule is a genetic sequence encoding a poison protein selected from the group  
15 consisting of CcdB, ParE, RelE, Kid, Doc, MazE PemK, Hok proteins.

4. The recombinant eucaryote cell or organism according to claim 1 or 3, which is a plant or a plant cell.

20 5. The recombinant eucaryote cell or organism according to claim 1 or 3, which is an animal cell or an animal organism, preferably a mammalian cell or a mammalian organism.

6. The recombinant eucaryote cell according  
25 to claim 1 or 3, which is a yeast cell.

7. The recombinant eucaryote cell or organism according to anyone of the preceding claims, which further comprises a genetic sequence encoding an antidote molecule to said toxic molecule, said encoded antidote  
30 molecule being possibly under the control of an inducible promoter/operator genetic sequence.

8. The recombinant eucaryote cell or organism according to anyone of the preceding claims, wherein the inducible promoter/operator genetic sequence is

induced by a non-toxic compound, preferably a exogenous compound or a compound that is synthesized by the eucaryotic cell or organism itself, preferably at a specific stage of its development or in a specific tissue.

5                   9. The recombinant eucaryote cell or organism according to anyone of the preceding claims, which further comprises integrated into the genome, a genetic sequence which is the target of the toxic molecule.

10                   10. The recombinant eucaryote cell or organism according to anyone of the preceding claims, wherein the genetic construct is integrated into the genome of specific cell compartments, such as chloroplasts or mitochondria.

15                   11. A production and selection method of a genetically modified eucaryote cell or organism having integrated into their genome foreigner (exogenous) DNA fragment(s) which comprises the steps of (i) providing the recombinant eucaryote cell or organism according to any one of the preceding claims 1 to 10 with the genetic construct  
20 carrying the toxic gene integrated therein, (ii) providing a construct carrying said foreigner DNA fragment; (iii) obtaining the integration, in the genome of the recombinant eucaryote cell, of said foreigner (exogenous) DNA fragment(s) at the insertion site where the genetic  
25 construct is integrated; (iv) selecting the genetically modified eucaryote cell or organism having integrated said foreigner (exogenous) DNA fragment(s) under condition allowing the expression of the toxic molecule in said cells or organisms; and (v) recovering said genetically modified  
30 eucaryote cells or organisms which do not express said toxic molecule following the integration of the foreigner (exogenous) DNA fragment(s).

12. The production and selection method according to claim 11, wherein said foreigner (exogenous)

DNA fragment(s) are integrated into the genome of the recombinant eucaryote cell or organism preferably by homologous recombination between the sequence of said foreigner (exogenous) DNA fragment(s) and the sequence of the genetic construct integrated into the genome of the recombinant eucaryote cell or organism.

13. The method according to claim 11 or 12 wherein said eucaryote cell or organism is a plant or a plant cell transfected by a Ti-plasmid incorporating the toxic gene and being preferably present in *Agrobacterium tumefaciens* and wherein a complete transgenic plant is possibly obtained from the recovered genetically modified plant cell.

14. A recombinant procaryote cell, which is genetically modified by the integration in its genome of a genetic sequence which is the target of a toxic molecule, preferably a toxic molecule selected from the poison/antidote group, such as CcdB, ParE, RelE, Kid, Doc, MazE PemK, Hok proteins.